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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/581,804	06/16/2000	KEON-HOON YOO	A33291PCTU	4337

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NEW YORK, NY 10112

EXAMINER
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LEE, RIP A

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 05/06/2003

20

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/581,804

Applicant(s)

YOO ET AL. *g*

Examiner

Rip A. Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on February 24, 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 2 and 5-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 5-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other:

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 24, 2003 has been entered.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1, 2, and 5-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,767,833 to Yumoto *et al.* in view of JP 56-41216 for the same reasons indicated previously. These reasons are presented again below.

Yumoto *et al.* discloses a transparent, thermoplastic resin composition obtained by graft polymerizing 50-95 parts (by weight) of a monomer mixture consisting essentially of styrene and methyl methacrylate in the presence of 5-50 parts of a rubbery substance. The rubbery substance is comprised of (A) 40-80 % by weight of "small aperture" styrene-butadiene copolymer latex (gel content of 30-100 %, number average particle diameter 0.05-0.2  $\mu\text{m}$ ) and (B) 20-60 % by weight of "large aperture" styrene-butadiene copolymer latex (gel content 10-80 %, number average particle diameter 0.2-3  $\mu\text{m}$ ); see claim 1. The molar ratio of styrene to methyl methacrylate is 20-55/30-70 (claim 12). Vinyl cyanide compounds such as acrylonitrile can also be grafted onto said rubbery substance (col. 4, lines 5-10 and 28-30). As shown in Example 1, the amount of acrylonitrile used (5 parts) lies within the claimed range. Although Yumoto *et al.* teaches use of styrene-butadiene latex, it does not teach the use of polybutadiene latex.

The prior art of JP 56-41216 also relates to thermoplastic resins of high transparency and impact resistance. The reference teaches graft polymerization of a monomer mixture of at least two monomers selected from styrene(s), (meth)acrylonitrile, and methyl (meth)acrylate which is emulsion polymerized in the presence of polybutadiene homopolymer or styrene-butadiene copolymer. One learns from the disclosure that, in the context of transparent thermoplastic resins, polybutadiene and styrene-butadiene are functionally equivalent materials, and that both, used interchangeably, afford equally useful products. Therefore, the skilled artisan would have

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found it obvious to use polybutadiene in the composition of Yumoto *et al.* based on its expected interchangeability as functionally equivalent materials. As shown in the prior art, one with skill in the art would have expected such a modification to work. *In re O'Farrell*, 7 USPQ 2d 1673 (Fed. Cir. 1988).

Both references are silent with respect to the swelling index of the latex. However, in view of the fact that (i) the value of gel content lies within that presently claimed, (ii) gel content and swelling index are related to each other, and (iii) the same amount of molecular weight control reagent is used in the manufacture of latex, reasonable basis exists to believe that the prior art latex possesses the same properties. Since the PTO can not perform experiments, the burden is shifted to the Applicants to establish an unobviousness difference. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

Regarding claim 2, Yumoto *et al.* teaches the use of various types of polymerization initiator, molecular weight regulator, and emulsifier (col. 5, lines 18-49). In Example 1, 0.5 parts of emulsifying agent, 0.3 parts of molecular weight control agent, and 0.5 parts of initiator are used. The difference between the example of Yumoto *et al.* and the present claims is that the amount of initiator lies outside the claimed range of 0.05-0.3 parts. However, this is a generic example. It would have been obvious to one having skill in the art to arrive at the claimed amount since it has been held that the discovery of optimum values of result effective variables, such as the amount of initiator required to start a reaction, is within the level of ordinary skill. *In re Boesch*, 205 USPQ 215 (CCPA 1980).

Finally, claim 12 requires the total refraction coefficient of the compound, excluding the polybutadiene latex is 1.510-1.526. In view of the fact that the refraction coefficient of methyl methacrylate, styrene, and acrylonitrile are 1.49, 1.59, and 1.518, respectively, and in view of the fact that the amounts of components decreases in the order, methyl methacrylate, styrene, and acrylonitrile, it is highly likely that the refraction coefficient lies within the claimed range. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). The PTO can not perform experiments, therefore, the burden is shifted to the Applicants to establish an unobviousness difference. *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

#### ***Response to Arguments***

5. Applicant's arguments and declaration under 37 C.F.R. 1.132, filed on February 24, 2003, have been reviewed and considered fully.

The conclusions derived from the experimental data are irrefutable. Indeed, the Applicants have shown that optimal balance between gel content and swelling index is required in order to attain transparency without compromising shock strength. However, these data, in conjunction with the Applicant's arguments neither overcome nor address directly the basis of the rejection under 35 U.S.C. 103(a).

First, there is no showing why the skilled artisan would not find it obvious to combine references, thereby using polybutadiene in lieu of styrene-butadiene in the compositions of Yumoto *et al.* A showing of non-obviousness is critical because JP 56-41216 shows that similar thermoplastic resins of high transparency and impact resistance can be prepared using polybutadiene homopolymer or styrene-butadiene copolymer. Secondly, the importance of

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swelling index in compositions of the present invention is fully appreciated. What remains is a showing that the material of the prior art does not possess the claimed swelling index.

Finally, the Applicant's concern that the gel content range recited in Yumoto *et al.* may not reflect that of the present claims is hereby noted. The fact is that the gel content ranges claimed in the Applicant's invention lie squarely within the ranges set forth in the prior art. In fact, Applicants have even acknowledged that the cited reference used gel contents of the large aperture SBR latex as 90.

In view of the discussion above, the rejection of record has not been withdrawn.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (703)306-0094. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (703)308-2450. The fax phone number for the organization where this application or proceeding is assigned is (703)746-7064. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

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May 1, 2003



DAVID W. WU  
SUPERVISORY PATENT EXAMINER  
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